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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,375	06/26/2003	Akira Kamoto	115169	4742
25944	7590	10/05/2004	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			NGUYEN, TU MINH	
			ART UNIT	PAPER NUMBER
			3748	

DATE MAILED: 10/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,375

Applicant(s)

KAMOTO ET AL.

Examiner

Tu M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 16 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8 and 9 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 062603.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of the species of Figure 15 in the reply filed on September 16, 2004 is acknowledged. Claims 8-10 are readable thereon will be examined in its full merit. Claims 1-7 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

The traversal is on the ground(s) that the subject matter of all pending claims is sufficiently related that a thorough search for the subject matter of any one group of claims would necessarily encompass a search for the subject matter of the remaining claims. Thus, it is submitted that a search and examination of the entire application could be performed without serious burden. This is not found persuasive because the four species of claimed invention are clearly not related in terms of their structures and/or modes of operation. For example, in the elected species of Figure 15, there are two catalysts and the engine air-fuel ratio is switched to lean after a rich operation. On the other hand, in the species of Figure 13, the engine air-fuel ratio is switched to rich after a lean operation. And each of the species of Figures 12 and 14 has only one catalyst. The clear unrelated features among the species of claimed invention would require a separate search area for each species and thus, impose a burden in search and examination.

The requirement is still deemed proper and is therefore made FINAL.

Specification

2. The abstract of the disclosure is objected to because the abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 8 is rejected under 35 U.S.C. 102(e) as being anticipated by Lewis et al. (U.S. Patent 6,751,947).

As shown in Figure 9, Lewis et al. disclose a catalyst degradation determining method for use with an emission control apparatus of an internal combustion engine that includes a first catalyst (52A) disposed in an exhaust passage of the internal combustion engine, a downstream-of-first catalyst air-fuel ratio sensor (902) disposed in the exhaust passage downstream of the first catalyst (52A), a second catalyst (52B) disposed in the exhaust passage downstream of the

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downstream-of-first catalyst air-fuel ratio sensor (902), and a downstream-of-second catalyst air-fuel ratio sensor (904) disposed in the exhaust passage downstream of the second catalyst (52B), the method comprising the steps of:

- acquiring an oxidizing-reducing capability index value ("current oxidant storage" determined in Figure 6) that changes in accordance with at least one of a degree of an oxidizing-reducing capability of the first catalyst and a degree of an oxidizing-reducing capability of the second catalyst;

- controlling an upstream-of-first catalyst air-fuel ratio occurring upstream of the first catalyst to an air-fuel ratio that is rich of a stoichiometric air-fuel ratio so that the first catalyst completely releases oxygen stored in the first catalyst and the second catalyst completely releases oxygen stored in the second catalyst;

- then controlling the upstream-of-first catalyst air-fuel ratio to a first lean air-fuel ratio that is lean of the stoichiometric air-fuel ratio, until a time point when an output of the downstream-of-first catalyst air-fuel ratio sensor indicates an air-fuel ratio that is lean of the stoichiometric air-fuel ratio, then controlling the upstream-of-first catalyst air-fuel ratio to a second lean air-fuel ratio that is lean of the stoichiometric air-fuel ratio and that has a value that is determined in accordance with the oxidizing-reducing capability index value, until a time point when an output of the downstream-of-second catalyst air-fuel ratio sensor indicates an air-fuel ratio that is lean of the stoichiometric air-fuel ratio (see lines 9-35 of column 6, Figure 4, and line 65 of column 6 to line 16 of column 7);

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- estimating a maximum oxygen storage amount of the first catalyst by taking into account the first lean air-fuel ratio to which the upstream-of-first catalyst air-fuel ratio was controlled (see Figure 4);
- estimating a maximum oxygen storage amount of the second catalyst by taking into account the value of the second lean air-fuel ratio to which the upstream-of-first catalyst air-fuel ratio was controlled (see Figure 4); and
- determining whether at least one of the first catalyst, the second catalyst and a catalyst device that includes the first catalyst and the second catalyst has degraded based on at least one of the estimated maximum oxygen storage amount of the first catalyst and the estimated maximum oxygen storage amount of the second catalyst (lines 9-35 of column 6).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lewis et al. as applied to claim 8 above, in view of design choice.

The catalyst degradation determining method of Lewis et al. discloses the invention as cited above, however, fails to disclose that the first lean air-fuel ratio is leaner than the second lean air-fuel ratio.

With regard to applicants claim directed to a leaner first air-fuel ratio than the second air-fuel ratio, the specification of such would have been an obvious matter of design choice well within the level of ordinary skill in the art depending on design variables, such as the available oxygen storage capacity of each catalyst, the size of each catalyst, etc. Moreover, there is nothing in the record which establishes that the specification of such presents a novel of unexpected result (See *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975)).

Allowable Subject Matter

7. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior Art

8. The IDS (PTO-1449) filed on June 26, 2003 has been considered. An initialized copy is attached hereto.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of four patents: Sawada et al. (U.S. Patent 6,138,453), Sullivan et al. (U.S. Patent 6,253,541), Yasui (U.S. Patent 6,256,983), and Tanaka et al. (U.S. Patent 6,336,320) further disclose a state of the art.

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Communication

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (703) 308-2833 or (571) 272-4862 to be effective on November 22, 2004.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (703) 308-2623 or (571) 272-4859 to be effective on November 22, 2004. The fax phone number for this group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1148.

Tu M. Nguyen

TMN

Tu M. Nguyen

October 1, 2004

Patent Examiner

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